



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/599,576

07/31/2007

Sakae Koyata

P30916

1978

7055 7590 05/25/2010
GREENBLUM & BERNSTEIN, P.L.C.
1950 ROLAND CLARKE PLACE
RESTON, VA 20191

EXAMINER

VINH, LAN

ART UNIT

PAPER NUMBER

1713

NOTIFICATION DATE

DELIVERY MODE

05/25/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

Office Action Summary	Application No. 10/599,576	Applicant(s) KOYATA ET AL.	
	Examiner LAN VINH	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>011107</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Erk et al (US 2004/0108297)

Erk discloses a caustic etchant comprises sodium hydroxide having a weight concentration of greater than 55 wt% or 58-70 wt % (page 5, paragraph 0055-0056)

It is noted that claims 1-2 are drawn to a composition and the recitation of “ for controlling surface roughness of a semiconductor wafer” is considered as claim language pertaining the intended use of the composition. Thus, no patentable weight is given to the claim language of “ for controlling surface roughness of a semiconductor wafer” since it is also noted that “ Likewise the intended use of composition is not patentably significant. In re Alberton 141 USPQ 730 (CCPA 1964); In re heck 114 USPQ 161 (CCPA 1957)

Regarding claim 2, Erk discloses that a temperature of the etchant/solution is maintained at 70°C to 120⁰ C when weight concentration of said sodium hydroxide solution is at least 70 wt % or 55 wt % (page 6, paragraphs 0059-0060, 0061), which reads on the claimed temperature of 80°C to 90⁰ C when weight concentration of said

Art Unit: 1713

sodium hydroxide solution is about 70 wt% and a temperature of the solution is 85°C to 90°C when weight concentration of said sodium hydroxide solution is 55 wt% to 60 wt%

2. Claim 3 is rejected under 35 U.S.C. 102(e) as being anticipated by Erk et al (US 2004/0108297)

Erk discloses a process for etching silicon wafer comprising the step of etching a main surface of a grinded semiconductor wafer/both-side mirror finished semiconductor wafer by bringing the main surface contact with a sodium hydroxide etching solution, wherein a temperature is 80°C or 90⁰ C and weight concentration is at least 70 wt% (page 4, paragraphs 0044, 0048, page 6, paragraphs 0059, 0060)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erk et al (US 2004/0108297) in view of Miyata et al (US 2005/0139230)

Erk method has been described above. Unlike the instant claimed inventions as per claims 4-5, Erk fails to disclose the step of neutralizing by an acid solution the main

Art Unit: 1713

surface of the wafer contacted with said etchant after said etching step, wherein said acid solution contains ozone

Miyata discloses a method for cleaning semiconductor wafer comprises a step of neutralizing by an acid solution the main surface of the wafer contacted with said etchant after an etching step, wherein said acid solution contains ozone (page 2, paragraphs 0031-0032, page 3, paragraphs 0035-0036)

One skilled in the art at the time the invention was made would have found it obvious to modify Erk method by adding/including a step of neutralizing by an acid solution the main surface of the wafer contacted with said etchant after an etching step as per Miyata since Miyata discloses that it is possible to neutralize the surface charge of the semiconductor wafer while preventing the metal impurities from dissolving in the cleaning solution and therefore; it is possible to prevent residual metal impurities within the cleaning tank from attaching to the semiconductor wafer (page 2, paragraph 0020)

Regarding claim 6, Erk as modified by Miyata fails to specifically disclose the limitation of wherein a wafer surface is processed by using an ozone solution after the neutralizing step by said acid solution. However, since Erk discloses a step of rinsing the wafer with ozonated DI water after the etching step (page 8, paragraph 0080), ones skilled in the art would have found it obvious to include a rinsing step using an ozone solution after the neutralizing step in order to substantially remove the acidic residual on the semiconductor wafer thus achieving an extremely cleaned wafer.

Conclusion

Art Unit: 1713

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAN VINH whose telephone number is (571)272-1471.

The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lan Vinh/
Primary Examiner, Art Unit 1713

Application/Control Number: 10/599,576
Art Unit: 1713

Page 6